

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 4-7 and 12-14 are presently active in this case. The present Amendment amends Claims 4-7, 12 and 14 without introducing any new matter; and cancels Claim 3.

The outstanding Office Action objects to Claims 3-7 because of informalities. Claims 3-7 and 12-13 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description and enablement requirement. Claims 3-6 and 12 were rejected under 35 U.S.C. §103(a) as unpatentable over Nakanishi et al. (U.S. Patent No. 6,728,034, herein "Nakanishi") in view of Perry et al. (U.S. Patent No. 5,907,436, herein "Perry"). Claims 7 and 13 were rejected under 35 U.S.C. §103(a) as unpatentable over Nakanishi in view of Perry and in further view of Chen et al. (U.S. Patent No. 5,914,811, herein "Chen").

In response to the objections to Claims 3-7, the present Amendment cancels Claim 3 without prejudice. Claim 4 is amended to delete the feature to recite "a diffraction grating having a concave/convex shape in cross-section formed in an incoming-side surface and an outgoing-side surface of a transparent." Further, Claim 7 is amended to depend upon Claim 5 and to recite "having a saw-tooth shape" for clarification. In light of their formal nature, these changes to Claims 3-4 and 7 do not raise a question of new matter.

In response to the rejection under 35 U.S.C. §112, first paragraph, and in order to clarify Applicants' invention, independent Claim 4 is amended to recite "an incoming-side diffraction grating having a concave/convex shape in cross-section," "a first outgoing side diffraction grating having a concave/convex shape in cross-section," and "a second outgoing-side diffraction grating ... having a concave/convex shape in cross-section, the second outgoing-side diffraction grating disposed in the first outgoing-side diffraction gating."

These features find non-limiting support in the disclosure as originally filed, for example at page 13, line 6 to page 14, line 9 and in corresponding Figure 1. Independent Claim 12 is amended in a similar way, to recite features regarding first and second outgoing-side diffraction gratings, and to recite “the second outgoing-side diffraction grating disposed in the first outgoing-side diffraction grating.”

Further, independent Claim 14 is amended to delete the features regarding the first and second organic layers, and is further amended to recite “a third diffraction grating comprising a single layer inorganic film, the third diffraction layer grating disposed in the second diffraction grating.”¹ In light of these amendments to Claim 14, Applicants respectfully submit that Claim 14 is now believed to read upon Specie A, shown in Figure 1.

Further, dependent Claims 5-7 are amended in order to correct minor formalities, and for consistency with independent Claims 4 and 12. In light of these amendments, it is believed that the objections to the claims and the rejections under 35 U.S.C. §112, first paragraph, are overcome. Accordingly, Applicants respectfully request reconsideration of these objections and rejections.

In response to the rejection of Claims 3-6 and 12 under 35 U.S.C. §103(a), Applicants respectfully request reconsideration of this rejection and traverse the rejection, as discussed next.

Briefly recapitulating, Applicants' invention, as recited in Claim 4, relates to a diffraction element including: An incoming-side surface opposite to an outgoing-side surface, the incoming-side surface configured to receive light; a diffraction grating including: an incoming-side diffraction grating having a concave/convex shape in cross-section disposed in a central region of the incoming-side surface; a first outgoing-side diffraction grating having a concave/convex shape in cross-section disposed in the outgoing-side surface

¹ Finds non-limiting support in the disclosure as originally filed, for example at page 13, line 6 to page 14, line 24 and in corresponding Figure 1.

and configured to receive light diffracted by the incoming-side diffraction grating, the grating pitch of the incoming-side diffraction grating is substantially equal to the grating pitch of the first outgoing-side diffraction grating; and a second outgoing-side diffraction grating including a single layer inorganic film and having a concave/convex shape in cross-section, the second outgoing-side diffraction grating disposed in the first outgoing-side diffraction grating. Independent Claim 12 recites similar features in the context of a method of diffracting light with a diffraction element.

As explained in Applicants' Specification at page 14, lines 10-14 with corresponding Figure 1, Applicants' invention improves upon conventional diffraction elements because it can reduce the effects related changes in propagation direction of the diffracted light when the wavelength of the diffracted light is not constant.

Turning now to the applied references, Nakanishi discloses a first and second diffractive optical element pattern formed on a first and second main surface of a substrate, respectively.² However, Nakanishi fails to teach or suggest the claimed second outgoing-side diffraction grating disposed in the first outgoing-side diffraction grating. On the contrary, Nakanishi explicitly teaches that the second diffractive optical element patterns 9 and 10 are positioned so as to be either directly incident to diffracted light or incident to the diffracted light after it has been subjected to total internal reflection by the main surfaces two times.³ Diffractive optical element patterns 9 and 10 located at different locations on a substrate, as disclosed by Nakanishi, *is not* an outgoing-side diffraction grating disposed in the first outgoing-side diffraction grating.

The reference Perry used by the Examiner to form the 35 U.S.C. §103(a) rejection does not remedy the deficiencies of Nakanishi. Perry discloses the design and fabrication of dielectric grating structures with high diffraction efficiency, by forming a multilayer

² See Nakanishi in the Abstract and in Figure 6.

³ See Nakanishi at column 10, lines 44-52 and in corresponding Figure 10.

structure.⁴ However, Perry also fails to teach or suggest the above noted feature related to an outgoing-side diffraction grating disposed in the first outgoing-side diffraction grating. Perry merely teaches that grating made onto the top layer of a dielectric stack is formed by directional evaporation of the dielectric grating material 74 through a mask 73.⁵

Therefore, even if the combination of Nakanishi and Perry is assumed to be proper, the combination fails to teach every element of the claimed invention. Accordingly, Applicants respectfully traverse, and request reconsideration of the rejection of Claims 3-6 and 12 based on these patents.⁶

In response to the rejection of Claims 7 and 13 under 35 U.S.C. §103(a), Applicants respectfully request reconsideration of this rejection and traverse the rejection. Since Claims 7 and 13 depend upon Claims 4 and 12, respectively, and the rejection of independent Claims 4 and 12 is believed to be overcome, Applicants respectfully submit that the rejection of Claims 7 and 13 is also believed to be overcome. Further, the reference Chen does not remedy the deficiencies of Nakanishi and Perry. Chen discloses a polarizing beam splitter with a series of periodic blazed grooves.⁷ However, Chen also fails to teach or suggest the above noted feature related to an outgoing-side diffraction grating disposed in the first outgoing-side diffraction grating, as claimed.

Therefore, even if the combination of Nakanishi and/or Perry with Chen is assumed to be proper, the combination fails to teach every element of the claimed invention. Accordingly, Applicants respectfully traverse, and request reconsideration of the rejection of Claims 7 and 13, based on these patents.⁸

⁴ See Perry in the Abstract.

⁵ See Perry at column 5, lines 42-47 and in corresponding Figure 7D.

⁶ See MPEP 2142 stating, as one of the three "basic criteria [that] must be met" in order to establish a *prima facie* case of obviousness, that "the prior art reference (or references when combined) must teach or suggest all the claim limitations," (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

⁷ See Chen in the Abstract.

⁸ See MPEP 2142 stating, as one of the three "basic criteria [that] must be met" in order to establish a *prima*

The present Amendment is submitted in accordance with the provisions of 37 C.F.R. §1.116, which after Final Rejection permits entry of amendments placing the claims in better form for consideration on appeal. As the present Amendment is believed to overcome outstanding rejections under 35 U.S.C. §112, first paragraph and 35 U.S.C. §103(a), the present Amendment places the application in better form for consideration on appeal. In addition, the present Amendment is not believed to raise new issues because the changes to Claims 4, 12 and 14 merely recite limitations fully supported by the disclosure as originally filed, and the changes to Claims 6-7 and 13 are of a minor nature. It is therefore respectfully requested that 37 C.F.R. §1.116 be liberally construed, and that the present Amendment be entered.

Consequently, in view of the present Amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 4-7 and 12-14 is earnestly solicited.

facie case of obviousness, that "the prior art reference (or references when combined) must teach or suggest all the claim limitations," (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

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